DRAFT
USACE Geospatial Data & Systems Vision

As the world's premier engineering organization, the US Army Corps of Engineers has the unique opportunity to be a leader in the area of geospatial technology. From the Districts, Divisions, Labs to HQ, the organizational infrastructure and expertise are in place for the Corps to step forward and lead in the area of Geospatial technologies. The Districts use GIS technology daily executing the Corps business and supporting our military program customers. ERDAC is actively researching complex geospatial solutions in tune with industry leaders. HQ is building links with high-level information systems to enable users to visualize corporate information more easily. Geospatial technologies are used throughout the Corps and geography is often the common denominator linking our systems. From the top down and bottom up, the Corps is in a position to lead in this technology area.

BACKGROUND

Currently, the Corps has many pockets of GIS expertise scattered throughout the organization. In order to execute our business, USACE uses everything from fully customized GIS solutions to individuals throughout program areas performing ad-hoc analysis using an out of the box Commercial-Off-the-Shelf (COTS) products. Many of our systems (such as, ENGLINK, WCDS, OMBIL) have incorporated a GIS component into the systems development. District offices use geospatial COTS daily to support GI planning, watershed management and habitat restoration studies. Many Districts are customizing COTS software and building databases to manage and regulate reservoir projects. In support of their missions, Navigation collects tremendous amounts of geostpatial data, hydrographic surveys, daily and Engineering collects detailed survey data for project construction. District Real Estate offices are just beginning to organize and manage our vast real estate holdings geospatially.

THE PROBLEM

While the Corps is using newest versions of GIS software and often have adequate hardware, corporately we have not embraced the technology, and therefore, have not realized the full potential of what the technology can do for the Corps. For the most part, data collection efforts, application development, and IM support are done in conventional Corps stovepipes. We typically develop single purpose systems and applications, building data to support those systems. We often build applications and databases that address single issues instead of building databases to support integrated solutions. We sometimes use the technology to "make pretty pictures" instead of analyzing the data to support problem solving. Data collections are often executed with little thought to how it will support the entire life of a project. Data are frequently being lost or poorly managed with no vision for implications on future uses or cost-savings that could be realized, given better data management practices. District offices are developing application software independently with little knowledge of neighboring

Districts developing the same product. Currently, we are an organization developing applications and databases that do not fit together and are often redundant.

THE VISION

A Corporate Approach

To reach our vision of being a leader in this technology, to ensure greater productivity, and reduce our cost of doing business, we need to develop a more corporate approach to geospatial technologies and data. We need to take full advantage of what the technology offers by embracing it throughout Corps business. We need to align geospatial application development with Corps business areas and establish Corps wide geospatial data standards so that we can share data across business areas and hierarchically throughout the organization. We need to look beyond developing project specific data sets and start developing corporate databases that support multiple applications. We need to move away from only pockets of expertise scattered throughout the organization to a knowledgeable workforce using geospatial technologies to enhance their daily activities. We also want to perform analysis not only using in-house data that we have collected, but also using existing data from other Federal agencies, state and local municipalities, etc. for an even more complete and reliable picture of the landscape.

Embracing geospatial technologies corporately will allow the Corps to make sound decisions supported by comprehensive analysis taking into account more facets of the environment.

STEPS ACCOMPLISHED TOWARDS REACHING THE VISION

Support Infrastructure

To develop a successful corporate approach, it is vital that a coordination and communication infrastructure, where geospatial technology issues are addressed, be supported. Throughout USACE, groups and committees have been established to address GD&S issues. Each District has established a GD&S technical and oversight committees to promote interoperability throughout the District's functional areas. The Geospatial Data & Systems Advisory Group (GDAG) advises HQ on GD&S issues from the field and brings a users perspective to policy development. The HQUSACE GD&S Coordination Committee address GD&S issues from a corporate oversight perspective. This group meets twice a year to discuss how functional areas use GD&S technology and what GIS functionality needs to be added to our corporate information systems. The Research and Development (R&D) Field Review Group (FRG) provides field input to the GD&S R&D Program. FRG members are asked to provide guidance and feedback to R&D work units as Laboratory Project Investigators (PIs) progress with their work. Once a year, the FRG meets to review, prioritize work units and decide which new work units should be funded. The USACE GD&S Manager/Coordinator is the facilitator for these groups; however, the success relies on support and involvement throughout the Corps.

Support Multi-agency Collaboration

External coordination and communication is also important to the Corps and fortunately there are mechanisms in place to facilitate. Many Corps District Offices are actively involved in their state and local GIS councils, developing working relationships that support our geospatial database development. These relationships often result in cutting cost through data sharing initiatives and solving mutual problems. The Tri-Service CADD/GIS Center is our link to coordinating with DoD installation managers and specific CADD/GIS vendors. Through the CAD2 contract, we have access to affordable software and maintenance from the primary GIS vendors. By being a member organization of the Federal Geographic Data Committee (FGDC), we have established communication links to other Federal agencies involved in geospatial technology as well as national organizations representing state and local communities along with vendor and academic consortiums. All of these mechanisms allow the Corps to effectively coordinate activities at all levels emphasizing our roll as a leader in geospatial technologies.

Support Standards

Through geospatial data standards, we enable our systems to internally and externally communicate. The Corps cannot be a leader if we develop internal standards that are not applicable to our customers and community. Therefore, we are involved in standards at many levels - from the user level, to Federal standards organizations that are linked to national and international standards bodies. The Tri-Service Spatial Data Standards (TSSDS) is a tool that allows us to feed user requirements to federal organizations and also implement federal standards in Corps GIS systems. It is an important mechanism that allows for standards to be developed and used at the same time.

BARRIERS TO REACHING THE VISION

While we have the coordination and communication infrastructure in place along with the expertise, barriers exist that prevent us from progressing internally as well as externally.

- Since most of our geospatial data is collected within conventional Corps stovepipes, we have issues concerning data ownership. At our Districts, many programs do not want to share data with other programs. Since program funds are often used to produce the data, programs often feel that it is their data.

- To often, our technical workforce does not receive the top to bottom support required to make the technology work corporately. Many of our managers lack the knowledge of GIS benefits and are unwilling to learn a new way of problem solving.

- Today, we have some experts in geospatial technologies… tomorrow there will be fewer. The Corps has a definite problem retaining a skilled geospatial workforce.

- To reach our vision we need identify how GIS can enhance our Corps mission programs. We need to identify specific GIS applications that will support Corps mission programs.

- Many of our business areas are ignorant of external geospatial programs and activities. The communication infrastructure is broken and it reflects poorly on the Corps to our customers.

- The Corps has no legislative authority to enter into cost saving geospatial partnering activities advocated by state and local GIS consortiums.

CONCLUSION

The Corps has an opportunity to lead in the area of geospatial technologies. We have the all the pieces in place - standards, contract vehicle, expertise, sound policy. However, all the pieces need corporate support in order to make the technology work for the Corps. This will allow the Corps to become a leader at nationally focused geospatial activities as well as geographically focused local projects and geospatial research programs.